United States Patent [19]

Drews et al.

[11] **Patent Number: 4,877,989**

[45] **Date of Patent: Oct. 31, 1989**

[54] **ULTRASONIC POCKET ATOMIZER**

[75] Inventors: **Wolf-Dietrich Drews**, Lichtenfels; **Klaus Van Der Linden**, Kronach; **Martin Rüttel**, Grub a. Forst; **Jürgen Friedrich**, Neuensorg, all of Fed. Rep. of Germany

[73] Assignee: **Siemens Aktiengesellschaft**, Munich, Fed. Rep. of Germany

[21] Appl. No.: **296,846**

[22] Filed: **Jan. 12, 1989**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 84,413, Aug. 10, 1987, abandoned.

[30] **Foreign Application Priority Data**

Aug. 11, 1986 [DE] Fed. Rep. of Germany 3627222

[51] **Int. Cl.**[4] **H01L 41/08**

[52] **U.S. Cl.** **310/323**; 310/317; 128/200.16; 239/102.2

[58] **Field of Search** 310/321-325, 310/317; 239/102.2; 128/200.14, 200.16

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,387,607	6/1968	Gauthier et al.	310/323 X
3,561,444	2/1971	Boucher	128/200.16
3,828,773	8/1974	Buch et al.	310/317 X
3,989,042	11/1976	Mitsui et al.	239/102.2 X
4,109,863	8/1978	Olson et al.	239/102.2
4,294,407	10/1981	Reichl et al.	128/200.16 X
4,334,531	6/1982	Reichl et al.	128/200.14
4,583,056	4/1986	Takeda et al.	310/317 X
4,718,421	1/1988	Rohwedder et al.	310/325 X
4,757,227	7/1988	Danley et al.	310/323

FOREIGN PATENT DOCUMENTS

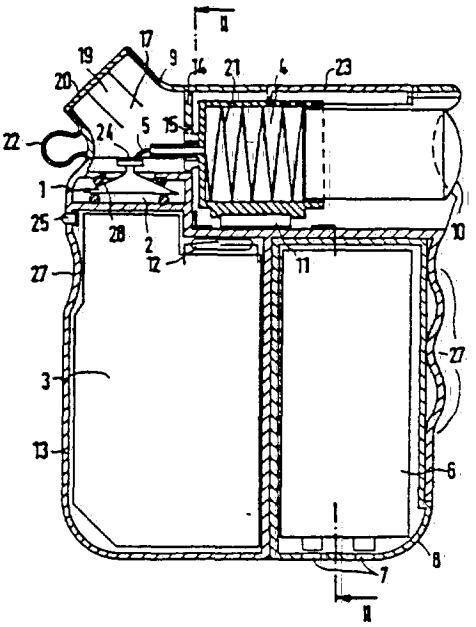
2557958	6/1977	Fed. Rep. of Germany	
2101500	1/1983	United Kingdom	128/200.16

Primary Examiner—Mark O. Budd
Attorney, Agent, or Firm—Kenyon & Kenyon

[57] **ABSTRACT**

An ultrasonic pocket-size atomizer comprises a housing including a first portion and a second portion detachably connected thereto. A vibration generation mechanism is mounted liquid-tight in the first portion of the housing for generating an oscillation with a frequency between 1 and 5 Mhz. The vibration generation mechanism includes a piezoelectric assembly and an electronic circuit operatively connected to the assembly for energizing the assembly and causing the assembly to vibrate. A power source including a storage battery is removably and rechargeably disposed in the first portion of the housing for supplying electric current to the electronic circuit. A cartridge is provided for containing liquid to be atomized, the cartridge being movably disposed in the second portion of the housing. An activation mechanism is provided for automatically activating the electronic circuit upon motion of the movable section of the cartridge, the activation mechanism including a magnet attached to the movable section of the cartridge so as to move therewith. The activation mechanism further includes a switch operatively connected to the electronic circuit and operable by the magnet upon a shift in the position thereof during motion of the movable section of the cartridge.

18 Claims, 3 Drawing Sheets



RECEIVED
PHILIP MORRIS MANAGEMENT CORP.
LAW DEPT.—PATENT SECTION

JAN 22 1990

NOTED UTSCH ✓
F & N ✓

2026230595

Source: https://www.industrydocuments.ucsf.edu/docs/stxl0000